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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/076,964

02/15/2002

Herbert F. Cattell

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04/11/2006

AGILENT TECHNOLOGIES, INC.
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EXAMINER

BASOM, BLAINE T

ART UNIT

PAPER NUMBER

2173

DATE MAILED: 04/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)		
	10/076,964		CATTELL ET AL.		
	Examiner		Art Unit		
	Blaine Basom		2173		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 23 January 2006.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 15-37 is/are pending in the application.

 4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 15-37 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 18 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

 a) ☐ All b) ☐ Some * c) ☐ None of:

 1. ☐ Certified copies of the priority documents have been received.

 2. ☐ Certified copies of the priority documents have been received in Application No. _____.

 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____
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DETAILED ACTION

This Office action is responsive to the Request for Continued Examination (RCE) filed under 37 CFR §1.53(d) for the instant application on 1/23/2006. The Applicants have properly set forth the RCE, which has been entered into the application, and an examination on the merits follows herewith.

Response to Arguments

The Examiner acknowledges the Applicants' amendments to claims 15, 19, and 27. Regarding claims 15, 18, 24-33, and 37, the Applicants argue that ScanAlyze (the "ScanAlyze" program, described by the "ScanAlyze User Manual"), cited in the previous Office Action, fails to teach graphical objects that are distinct from one another, as is claimed. The Examiner respectfully disagrees with this argument. As is described below, ScanAlyze teaches automatic flagging of identified microarray spots, whereby a user is permitted to specify thresholds to flag spots; spots that do not pass the specified threshold are highlighted with a bold outline. Thus, for example, each graphical object, which is depicted as bold outline, may represent a distinct flagged spot, which represents a distinct characteristic of the array data (see pages 18-19 and 25). As such graphical objects within the array are displayed individually, separate from each other, they are considered distinct from one another. As another example, it is understood that the user may automatically flag a first set of spots in the array according to particular parameters associated with each spot (see pages 18-19 and 25). The user may then change the parameters to flag a second set of spots. In such circumstances, the graphical objects

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denoting the flags associated with the first set of spots are distinct, i.e. distinguishable, from the graphical objects representing the second set of spots, and therefore, graphical objects representing parameters of spots within the array are distinct from one another.

As per claims 16-17 and 34-35, the Applicants argue that ScanAlyze and Malamud (U.S. Patent No. 6,437,800, to Malamud et al.), cited in the previous Office Action, fail to teach displaying results characterizing features calculated from data within images of the features themselves. In response, the Examiner presents the U.S. Patent of Bassett (U.S. Patent No. 6,453,251 to Bassett, Jr. et al.), which as shown below, teaches such a feature. The Applicant's arguments with respect to claims 16-17 and 34-35 have thus been considered but are moot in view of the new grounds of rejection presented below.

Concerning claims 19-23 and 36, the Applicants argue that Dapple ("Dapple: Improved Techniques for Finding Spots on DNA Microarrays"), cited in the previous Office Action, fails to teach superimposing graphical objects representing at least two different characteristics of data on an image of a molecular array, and fails to teach superimposing objects over positions where the data characteristics occur. In response, the Examiner respectfully notes that ScanAlyze teaches superimposing graphical objects representing at least two different characteristics of data on an image of a molecular array, and superimposing the objects over positions where the data characteristics (i.e. features) occur, as is described above. Dapple teaches using different types of indications (e.g. colors) to simultaneously represent different quality characteristics, as is described below. The Applicants further argue that ScanAlyze fails to teach a graphical object which may be used to indicate a statistically invalid feature background. The Examiner

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respectfully disagrees with this argument. ScanAlyze teaches that spots may be flagged according to characteristics of the background, including those that may indicate an invalid background (e.g. "Ch1B," Ch2B," Ch1GTB1," and "Ch2GTB1," described in pages 19-25). As such graphical representation depicting a flagged spot is as a bold outline, it is understood that such an outline is placed, at least partially, over the background of the spot.

The Applicants' arguments have thus been fully considered, but are not persuasive.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15, 18, 24-33, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by the "ScanAlyze" program, as is described by the "ScanAlyze User Manual." In general, ScanAlyze is a program for the analysis of DNA microarrays (see page 4).

Specifically regarding claims 15 and 27, ScanAlyze involves displaying an image of a molecular array, and superimposing distinct graphical objects representing at least two different characteristics of the data on the molecular array, wherein graphical objects representing different characteristics are distinct from one another, over positions where

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the data characteristics represented occur (for example, see page 19, and page 25). For example, each graphical object may represent a distinct flagged spot, considered a characteristic of the array (see pages 18-19 and 25). As such graphical objects within the array are displayed individually, separate from each other, they are considered distinct from one another. As another example, it is understood that the user may automatically flag a first set of spots in the array according to particular parameters associated with each spot (see pages 18-19 and 25). The user may then change the parameters to flag a second set of spots. In such circumstances, the graphical objects denoting the flags associated with the first set of spots are distinct from the graphical objects representing the second set of spots, i.e. graphical objects representing different characteristics are distinct from one another. Accordingly, ScanAlyze is considered to teach a method like that of claim 15. By the same reasoning, the graphical user interface of the ScanAlyze program is considered a graphical user interface like that recited in claim 27.

Regarding claims 18, 28-33 and 37, the characteristics in which the distinct graphical objects are superimposed are selected by the user (see page 19), and are related to the validity of the background, the validity of the feature, and the location of the feature (see page 25). Such graphical objects thus may be used to indicate: a statistically valid feature; a statistically invalid feature; a statistically valid feature background; a statistically invalid feature background; an outlier feature due to non-uniformity of pixel intensities within the feature, due to statistical variance in signal intensity from other features, or due to both non-uniformity of pixel intensities and statistical variance in signal intensities; and outlier feature background due to non-uniformity of pixel intensity with the background, due to statistical variation of the background region from the

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background regions surrounding other features of the array, or due to both non-uniformity of pixel intensities and statistical various of the background region; or a position of a center of a feature found by analyzing pixel intensities within and near the feature or by row and column indices and a refined feature grid determined from locations of strong features identified. As it is to the user's discretion regarding the use of these distinct graphical objects, it is understood that they may optionally be superimposed only over statistical outlier features and feature backgrounds.

As per claims 24-26, ScanAlyze teaches reading a sample-exposed array, and visually displaying results using the method described above. It is understood that the user may further process the results, for example, by adjusting parameter values (as done in page 19, for example). As such results are maintained on a computer, presumably via a file, it is understood that such results may be forwarded to a remote location, as is well-known in the art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16-17 and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the ScanAlyze application, as is described above, over U.S. Patent No. 6,453,251, which is attributed to Bassett, Jr. et al. (hereafter referred to as "Bassett"), and

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also over U.S. Patent No. 6,437,800, which is attributed to Malamud et al. (and hereafter referred to as "Malamud"). As described above, ScanAlyze teaches a method like that recited in each of claims 15 and 27, whereby a molecular array image is displayed concurrently with feature extraction results associated therewith. It is understood that a user may position a pointer over the position of a feature, to flag a feature for example (for example, see page 18). Regarding the claimed invention, however, ScanAlyze does not explicitly disclose that alphanumeric information related to a selected feature is displayed in response to selecting the feature, as is expressed in claims 16-17 and 34-35. Like ScanAlyze, Bassett describes a program for analyzing microarray data (for example, see column 1, line 36 – column 2, line 10). Bassett particularly teaches displaying an image of a microarray, whereby the user may select a spot within the array, resulting in the display of a panel that presents specific information about the selected spot (for example, see figure 6, and its associated description at column 13, line 66 – column 14, line 13). It would have therefore been obvious to one of ordinary skill in the art, having the teachings of ScanAlyze and Bassett before him at the time the invention was made, to modify the user interface of ScanAlyze to include functionality of Bassett, so that in response to selecting a spot, alphanumeric data associated with that feature is displayed. It would have been advantageous to one of ordinary skill to utilize this combination because such functionality provides the user with an efficient and easy means for obtaining specified information about any spot, as is demonstrated by Bassett. ScanAlyze and Bassett thus teach receiving an input indication of a feature, i.e. spot, and displaying an alphanumeric representation of information related to the feature, including results from a feature extraction process. Neither ScanAlyze nor Bassett, however,

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explicitly teach displaying such alphanumeric information within a tooltip, as is claimed. Nevertheless, tooltips are well known in the art. For example, Malamud teaches displaying a tooltip in response to a user positioning a pointer over a graphical object, wherein the tooltip displays alphanumeric information associated with the object (for example, see column 1, lines 34-49; and column 3, lines 26-47). It would have therefore been obvious to one of ordinary skill in the art, having the teachings of ScanAlyze and Malamud before him at the time the invention was made, to modify the user interface of ScanAlyze to include the tooltips of Malamud, so that in response to positioning a cursor over a feature, alphanumeric data associated with that feature is displayed in a tooltip. It would have been advantageous to one of ordinary skill to utilize this combination because such tooltips may reduce confusion and the burden of the user when viewing data associated with a feature, as is taught by Malamud (for example, see column 1, lines 15-43).

Claims 19-23 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over the ScanAlyze application, as described above, and also over the "Dapple" application, as described by the article entitled, "Dapple: Improved Techniques for Finding Spots on DNA Microarrays," which is attributed to Buhler et al. (and hereafter referred to as "Buhler"). As described above, ScanAlyze involves displaying distinct graphical objects superimposed over features of a molecular array. The characteristics in which the distinct graphical objects are superimposed are selected by the user (see page 19), and are related to the validity of the background, the validity of the feature, and the location of the feature (see page 25). Such graphical objects thus may be used to

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indicate: a statistically valid feature; a statistically invalid feature; a statistically valid feature background; a statistically invalid feature background; an outlier feature due to non-uniformity of pixel intensities within the feature, due to statistical variance in signal intensity from other features, or due to both non-uniformity of pixel intensities and statistical variance in signal intensities; and outlier feature background due to non-uniformity of pixel intensity with the background, due to statistical variation of the background region from the background regions surrounding other features of the array, or due to both non-uniformity of pixel intensities and statistical variance of the background region; or a position of a center of a feature found by analyzing pixel intensities within and near the feature or by row and column indices and a refined feature grid determined from locations of strong features identified. ScanAlyze, however, does not involve using distinct types of indications, distinct from the others in terms of shape or color, to indicate such characteristics. Like ScanAlyze, Dapple is an application used for displaying and analyzing molecular arrays (see the "Introduction" on page 1). Dapple particularly teaches marking spots using a plurality of distinct graphical objects, to indicate valid features, invalid features, and "intermediate" quality features (see 3.3 on page 5), and is therefore understood to involve distinct types of indications, distinct from the others in terms of shape or color, to indicate such characteristics. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the ScanAlyze application by using different types of indications to indicate valid features, valid feature backgrounds, invalid features, invalid feature backgrounds, and positions of features, as taught by Dapple. One would have been motivated to create such a combination because such different types of indications aid the

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user in analyzing a molecular array, as is demonstrated by Dapple. As such indications are arbitrary, these indications may comprise figures like recited in claims 20 and 21, and have colors like expressed in claims 22 and 23.

Conclusion

The prior art made of record on form PTO-892 and not relied upon is considered pertinent to applicant's disclosure. The applicant is required under 37 C.F.R. §1.111(C) to consider these references fully when responding to this action. The Nakao et al. U.S. Patent cited therein teaches using distinct graphical objects to represent different feature characteristics in a microarray.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blaine Basom whose telephone number is (571) 272-4044. The examiner can normally be reached on Monday through Friday, from 8:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cabeca can be reached on (571) 272-4048. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

btb
4/3/2006

